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HISTORY OF CORN PLANTERS

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Primitive planting method

Butterworth (4, p.5 1/) states that "Pliny says the Romans sowed their corn with as much care as they raised their armies: that Columbus found the natives of the West Indies using bread of maize: that Humboldt says that the cultivation of maize was introduced into Mexico in 666(A.D.) by the Toltecs: that when Capt. John Smith visited Virginia in 1609, in writing of the Indians, he says:- 'The greatest labor they take is in planting corn.'"

The growing of corn by the Indians in the very early days, and by the early English settlers is interesting, especially when compared with methods and equipment used at the present time. Bidwell and Falconer (2,pp.10-12) cite Governor John Winthrop, Jr. of Connecticut, as authority for the following statement:- "It (maize or corn) is planted between the middle of March and the beginning of June, but most commonly from the middle of April to middle of May. Some of the Indians take the time of the coming up of a fish, called Aloofes, into the Rivers; others of the budding of some trees. ***** "The manner of planting is in rows, at equal distance every way, about 5 or 6 feet. They open the earth with the howe (hoe), taking away the surface 3 or 4 inches deep, and the breadth of the hoe, and so throw in 4 or 5 granes (kernels) a little distant one from another, and cover them with earth. If two or three grow, it may do well. For some of them are usually destroyed by birds or mouse-squirrels. The corn grown up an hands length, they cut up the weeds, and loosen the earth about it with a broad hoe; repeating this labor, as the weeds grow. When the stalk begins to grow high, they draw a little earth about it; and upon the putting forth of the ear, so much, as to make a little hill, like a hop-hill. After this they have no other business about it, till harvest. ***** Where the ground is bad or worn out, the Indians used to put two or three of the forementioned fishes under or adjacent to each corn-hill, whereby they had many times a crop double to what the ground would otherwise have produced. ***** The English settlers in Connecticut before 1678 had introduced the use of the plough in cultivating maize." Winthrop added the following to his description of Indian agriculture: "The English have now taken to a better way of planting by the help of the plough; in this manner; in the planting time they plough single furrows through the whole field,

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1/ Figures in parenthesis refer to references cited at end of article.

about 6 feet distant, more or less, as they see convenient. To these they plough other across at the same distance. Where these meet they throw in the corn, and cover it either with the hoe or by running another furrow with the plough. When the weeds begin to overtop the corn, then they plough over the rest of the field between the planted furrows, and so turn in the weeds. This is repeated once, when they begin to hill the corn with the hoe; and so the ground is better loosened than with the hoe, and the roots of the corn have more liberty to spread. Where any weeds escape the plough, they use the hoe.

"Among the hills of the corn were planted beans and pumpkins, after the multiple-cropping system of the Indians. The stalks served as poles for the beans to climb upon. The importance of corn is shown by its early acceptance as a payment in kind for taxes. Corn seems to have served in all the colonies as a preliminary crop before other grains.

According to the United States Department of Agriculture (10, pp. 331-332) "In the earlier years the plow and harrow of that period were used; the check rows were marked with the shovel plow; the seed was dropped by hand from a bucket or pouch carried by the farmer, and covered with a hoe."

In the Report of the Commissioner of Agriculture for 1870, (9,pp. 400-401) it is stated that "In the cultivation of corn and other cereals in this country, in the earlier times, the condition of the newly cleared land precluded the employment of machinery in the planting and sowing of seeds; and hence corn was planted by hand, and wheat and other small grains were sown broadcast. Machinery could not have been made available to any great extent for this purpose, in consequence of the presence of roots and stumps of trees of the primitive forests; and it was not until the lands of the New England, Southern and Middle States had become cultivated, and immigration extended to the prairies of the West, that a necessity for this class of agricultural machinery was felt."

Crampton (5) relates that "In early days corn was planted in single rows by hand, by hand planters, or by some crude one-horse machine. In some places where small fields or clearings are planted, these methods are still employed. With the opening of the prairies of the great West, a more rapid method became necessary. In addition it became important to plant in hills so that the corn could be cultivated both ways, thereby reducing the labor of weeding to a minimum."

Fowler (7, p.355) states "Corn planters are strictly an American invention. Several patents on seeding machines were issued by the United States Patent Office from 1799 down to 1836, when the records were destroyed by fire, and some one or more may have been granted for putting seed corn into the ground. Afterwards other patents were granted covering various types, and improvements in hand and horse planters."

According to Bidwell and Falconer (2, p.381) "Whatever the degree of development in agricultural machinery prior to 1840, however, it was only a beginning when compared with the improvement and the general adop-

tion of new machinery which took place during the next two decades. In 1840 ***** Corn was planted by hand, and cultivated with the plow, or, in the East, with a crude and more or less unsatisfactory cultivator. ***** Farm machinery was still largely the product of the farm or local blacksmith shop. ***** The scarcity of labor and the expansion of agricultural production into the prairie region stimulated the rapid development and introduction of improved agricultural machinery. The improvement along these lines which had been made before 1840 has been summarized by one writer as follows:-

"The disparity between old and new implements of culture is great, not only in the time employed, but in the manner in which they do their work, and in the power required to perform it. The old plow required a four-cattle team, and two hands, to manage it, and the work ordinarily was but half executed. The improved plow is generally propelled by two cattle, requires but one man to manage it, and, when properly governed, performs thorough work. Harrows and other implements have undergone a like movement. Besides, new implements, which greatly economize the labor of tillage, are coming into use, as the roller, cultivator, drill-barrow, etc., so that a farm may now be worked with half the expense of labor that it was wont to be worked forty years ago, and may be better worked withal. *****

"The corn crop of 1840 was planted with the hoe, the plow or the ax. ***** Hand planters and drills, it is true, were used to some extent in the East, but there was as yet no satisfactory machine for the planting of corn. During the fifties corn planters came rapidly into use, and by 1860 a large portion of the corn crop of the West was planted by one-row and two-row planters, hill planters and drill planters. ***** The Ohio farmer of 1860 who adopted the improved methods of production then available could probably produce his crops with two-thirds the labor required in 1840."

Hand planters

In the Report of the Commissioner of Agriculture for 1869, (9,pp.324-325) it is stated:- "Fifteen years ago there were but four patented hand planters; today there are over a hundred. During this period our inventors have been active. ***** Our inventors have generally followed two well known styles of hand planters. The first and most favored is that exhibited in the patent of D.W. Hughes, which patent has just expired, and is therefore public property. In this invention there are provided two legs, pivoted together like the divisions of a candle-snuffer, the lower end or point of which is intended to be thrust into the ground to form an opening for the seed, the upper end being provided with a pair of handles. To the outside of one of the legs is securely affixed a seed box, into which extends a seed slide, which is connected to the other leg. In operation, the lower end of the planter is thrust into the ground; the handles are then brought together, which enlarges the opening in the soil, and at the same time draws out the seed slide, and with it a charge of grain, which drops into the opening. The planter is then withdrawn, and the seed covered with soil thrown upon it, and pressed down by the foot of the operator.

"The other implement is what may be termed the 'plunger' planter. It consists of a dibbler to which is attached a seed box about two-thirds the distance from the top, and a valve secured at the bottom, this valve being so constructed as to be adapted to make a hole or seed opening in the soil. Through the seed box runs a slide provided with a cell for grain, and with a handle extending upward and within reach for convenient operation. In planting, the slide is drawn up and a charge is thereby drawn from the box and dropped into the valve. The planter is then plunged into the ground, and the slide moved downward, its lower end opening the valve and discharging the grain from it."

Machine planters

Holmes (8, pp.316, 317) states "Hundreds of patents have been issued for corn planters. The earlier ones were adjustments to the hoe, which permitted the release of grains of corn when the hoe was struck into the ground; then came the hand planter, and the next step was the horse drill. Next came the idea of marking rows in both directions with a drag. A long beam with pins in it was dragged both ways across the field by horses, and then the farmer would go along with the hand planter and plant the corn at the intersection of the rows. Still, again, followed an improvement, and this was the corn planter which planted two rows at one time with the rows running in both directions. A man sat on the machine, and, at every point where the drag had crossed at right angles, he moved a lever that dropped the corn, which was covered by wheels that turned and pressed down the soil upon the seed. The check rower followed; it was a simple implement, consisting of a wire chain or knotted rope stretching across the field and anchored at both ends. This passed through the machine as it was driven across the field and dropped some grains of corn every time the knot passed through a slot in the machine. It was only necessary to drive backward and forward all day long until the acres were planted, and then the corn could be cultivated in both directions. Subsequently, numerous check-row planters for corn have been invented with and without fertilizer adjustments, so that several rows of corn may be planted at the same time in places at regular distances apart, permitting cultivation in both directions."

"The first patent granted for a corn planter in this country was to Eliakim Spooner, of Vermont, January 25, 1799; the first for a cotton planter to Christopher Ford, of Virginia, May 26, 1825. From 1800 to 1828 there were but few patents granted for seeding machines of any description. August 13, 1828, a patent was granted to Austin H. and Levi Robbins for a machine for planting different seeds. The machine is placed upon a frame and wheel similar in construction to that of a common wheelbarrow, and was pushed over the ground, the operator walking behind. A writer, speaking of this machine, in November, 1828, sets forth its value as follows: 'There can be no difficulty in the application of this machine to the planting of any kind of seeds, and any number of them at a time, and at any required distance, as fast as a man can walk. When the rows are set four feet apart one way and eighteen inches the other, there is no difficulty, nor is it a very hard day's work, for a man to plant ten acres after the ground is properly prepared to receive the seed.'" (10, p.401)

"The first machines used for seeding were universal in the respect that they were used for the smaller grains as well as corn." (6, p.120) One of the early patents for a corn planter was issued to D.S. Rockwell, on March 12, 1839. This machine is described by Audrey (1, p. 30) as "a planter with four wheels of equal size and two seed-boxes, and was intended to plant two rows. Furrows were opened for each row by a peculiarly shaped shovel, behind which the seed was dropped between two diagonally set blades, the combination of shovel and blades being faintly suggestive of the modern shoe. The rear wheel, set behind the blades, covered the corn and packed the earth as in the modern planter. The seed was dropped from the hopper by a device consisting of the slides placed above and below the partition, and operated upon by means of a toothed segment and pinion, arranged substantially as set forth, and set in motion by one of the bearing wheels.'

"The next patent, to G. Mottmiller, of Columbus, Ohio, Sept. 1, 1843, covered a frame jointed to the axle, but had other features not consistent with a practical planter. E. Wood's invention, patented January 10, 1845, was intended for drilling two rows of potatoes, but had many features of a successful corn planter. Edward Hicks, of Bart Township, Pa. patented March 26, 1850, a planting cylinder containing cells or cavities that could be enlarged or diminished as might be required. D.B. Rhodes, of Concord, N.Y. patented in December, 1850, a double-row planter in which the hopper had two sliding bottoms arranged to measure and drop the seed. In C. Van Every's planter, one wheel, about four feet in height, had an intermittent gear with cogs at three points on its periphery to operate the dropping device, so as to plant three hills with each revolution of the wheel." "It will be observed that all the inventions mentioned thus far had automatic dropping devices, but in the next patent, to M. Corey, of Jerseyville, Illinois, October 28, 1851, there was a claim covering an indicator to point out 'the place where corn had been planted', suggestive of operating the dropper by hand. The next and last patent previous to the appearance of a generally successful planter, was granted to H. Vermillion, of Rising Sun, Indiana, November 2, 1852, and covered a peculiar distributing device. (1, p.30)

"The aim of these early inventors was evidently to produce an automatic planter, and nothing practical came of their efforts because the real need of the western farmer was a planter that would place the hills in check, so the corn could be plowed both ways. A device for dropping the corn by hand or in some way under the direct control of the operator must be combined with means for opening the furrow and covering the corn. This was done by George W. Brown, of Tylersville (later of Galesburg), Illinois, whose first patent was issued August 2, 1853, but afterward reissued February 16, 1858, and again reissued September 11, 1860. It is said that Mr. Brown used his planter successfully as early as May, 1851. In his first patent in 1853 he claimed: 'The oscillating horizontal wheels or distributors, in the bottom of the hopper, having slots and holes of various sizes, in combination with stationary caps and pins, for the discharge of different kinds and quantities of seeds. Also, the arrangement of covering rollers, mounted as described, and performing the purposes of covering the seed, elevating the cutters in turning around,

and in adjusting them to different depths.' As reissued in 1858 the patent had only one claim: 'A shoe for opening a furrow, which has a convex edge in front and a seed-tube in its rear end, so that it may cut through any grass, open out a furrow and hold it open until the seeds are deposited in it, substantially as herein set forth.' (1, p.31)

"In the reissue of September 11, 1860, all the new features in Mr. Brown's planter were covered in five divisions or claims. Briefly stated, the first division covered the frame, supported in front on not less than two runners or shoes with upward inclining edges, and the rear part supported on not less than two wheels, the latter being arranged to follow the former. The second division covered the shoe or runner, edged and curved upward in front so as to climb, cut or break through obstacles, and widening toward its rear end so as to open a furrow for the seed; and also made long enough to furnish support to the framework. The third division covered the hinged joint between tongue and rear of the machine, so that one part of the frame might be raised, lowered, adjusted, or supported on the other part. The fourth division claimed the operation by hand of the dropping mechanism, by an attendant riding on the machine, in position to see the marks for the corn and to operate in conformity therewith; also the lever and its arrangement by which the driver could raise the framework and seeding devices carried thereon, to aid the machine in passing over obstacles and in turning around. The fifth division claimed in combination with runners and covering wheels, a pair of auxiliary wheels and an axle for the double purpose of taking the weight off the runners and covering wheels, and for affording means for converting the machine from a planter operated by hand to an automatic seed-sower; and also hanging the axle of auxiliary wheels in adjustable arms or levers so that more or less of the weight of the machine might be placed upon said auxiliary wheels. (1, p.31)

"Other patents were granted about this time. One to L. Caswell, of Harrison, Maine, August 1, 1853, covered an adjustable axle; another to E. Marshall, of Clinton, New Jersey, April 11, 1854, was on automatic dropping devices, and still another to M. Ward, of Owego, New York, March 27, 1855, covered a slotted adjustable share and short compressing blocks on the periphery of the wheel, to press the earth over the seed and at the same time mark the hill. (1, pp.31-32)

"George W. Brown's second patent was issued May 8, 1855, and claimed: 'In combination with the hoppers and their semirotating plates, the runners, with their valves, and their adjustment by means of levers and cams, and the driver's weight, for the purpose of carrying and dropping seeds by each vibration of the lever, and to regulate the depth of planting as described. (1, p.32)

"This second patent of Mr. Brown's was reissued November 10, 1857, and again December 11, 1860. As reissued it covered: Placing seats of driver and dropper so that one balanced the other; making driver's seat adjustable so he could put more or less of his weight on the seeding apparatus, and thus regulate the depth; hanging the seeding apparatus on hinged joints so it could be raised out of the ground and carried on the wheels and tongue; a stop for preventing rear part of frame from descend-

ing too low when the forward part was raised and carried; and finally, an improvement in dropping device, by which, with one lever, the seed passages could be opened and closed at regular intervals to pass measured quantities. (1, p.32)

Markers

"The first patent on a marker was granted to E. McCormick, October 16, 1855, for a device projecting from the end of the axle. F. Goodwin, of Astoria, New York, March 3, 1857, showed in his patent the first marker that could be changed from one side to the other, but did not make any claim on it, and Kuschke and Merkel, of St. Louis, in their patent of May 26, 1857, made no claim for their markers, one on each side of the planter, arranged so as to be folded over the planter when not in use. The marker as used to-day (1894) was shown in the invention of Jarvis Case, of La Fayette, Indiana, whose patent, under date of December 1, 1857, showed a marker having a double edged shoe, and hinged so that it could be turned over to mark on either side, or be raised clear of the ground in turning."

Blackburn (3, pp. 707, 731) gives a somewhat fuller description of the McCormick invention. "In 1855 E. McCormick secured a patent for a device projecting from the axle for the purpose of marking the next row. The contrivance consisted of a wooden shaft attached to the axle, and having on the free end a small block of wood which would scratch a furrow at a sufficient distance from the row to enable the operator to produce exactly parallel rows by driving with the tongue of the planter directly over the tiny furrow. The instrument was further improved, and brought to its present form by Jarvis Case, of Lafayette, Indiana, in 1857." ***** "J.W. Vandiver in 1863 patented adjustable covering shares. ***** An early patent of George W. Brown shows the principle of the rotary drop, in which the dropping plate is rotated by intermittent steps, moving forward with either a right or left motion of the dropping lever." (1, p.32)

In the latter part of the 19th century some manufacturers adopted "the principle of gearing the dropping mechanism to the wheel of the planter so as to drop one kernel at a time into the valve. The advantage of this device" ***** "is that the corn can, if desired, be planted in hills with a check-row attachment or the check-rower can be taken off and the corn drilled in." ***** Some other manufacturers "introduced what they termed a 'force feed' - a peculiar form of secondary drop operating in the valve of the planter." Another built its planters with "a telescoping axle, by which the wheels could be moved away from the rows when it was not considered best to pack the soil on the corn." About this time steel was generally adopted in the construction of corn plantrs." (1, p.32, 34)

Check rowers

"The first invention of a planter to drop in check automatically, is accredited to M. Robbins, of Cincinnati, Ohio, whose patent of February 10, 1857, covered a reversible hopper, an arm with vibrating claw or tappet connected with the seeding mechanism, in combination with a jointed rod or chain provided with buttons. This patent was reissued February 9, 1858, with three claims, the first covering the dropping of seed from a plow or

drill by means of an anchored chain or its equivalent, the second claim covering the chain or cord, and the third claiming an arm with a vibrating claw, or tappet, or equivalent devices, operating the seed discharging mechanism. Mr. Robbins' invention was practically a one-horse drill, with the chain or rod attached as patented, and it did not become known as a 'check-rower'. This name was given to later inventions of the Haworths and others, who had in view a separate attachment to be put on any planter. (1, p.34)

Following the Robbins patent was one "issued to John Thompson and John Ramsay, of Aledo, Illinois, September 29, 1864, and covered the employment or use of a wire or cord, provided with knots at a suitable distance apart, and applied to the machine ***** with anchors. This was reissued as assigned to G.D., J.W., L.L. and M. Haworth, December 21, 1875, and again October 31, 1876. The last reissue covered the knotted cord for actuating seeding devices; guides or pulleys arranged to transfer said cord from one side of the machine to the other in its passage over the same; the combination with the rock shaft operated upon the cord, of forked arms or levers placed one at each end of said rock shaft and adapted to be operated upon alternately by the cord; and finally, the arrangement of seeding devices in connection with the cord, whereby the latter could impart positive movement in one direction to seeding devices." (1, p.34-35)

"April 24, 1866, W.W. Hubbard, of Edinburg, Indiana, obtained a patent for various improvements, which also was reissued to the Haworths, March 27, 1877. This covered horizontal traversing bars for automatically moving check-row cords at the end of the field, and a movable arm for supporting on machine when turning. G.D. Haworth took out a patent on check-rower devices February 22, 1870, and several others were issued later to the Haworths in the same line." (1, p.35)

"A patent was issued to Alden Barnes, of Bloomington, Illinois, November 5, 1872, and was reissued in two divisions, February 20, 1877, covering several devices, the most important being a check-row chain made with knots formed by coiling a piece of wire around the main wire. (1, p.35)

Crampton, (5, p.5) relates that "Alden Barnes on November 5, 1872, designed a check rower which operated at the side of the planter. This was improved upon in a patent to A. & M. Barnes, December 19, 1896. ***** Other check rowers were also brought out and thus the drop seat passed out of existence, although it was used for a time to plant the cross rows at end of field."

Listers

"The introduction of the lister --- a modified form of corn planter -- dates from about 1880. Several patents were granted to Missouri and Kansas farmers, and the implements were at first made in small numbers by local blacksmiths." ***** The distinguishing feature of a lister is a small double moldboard plow adapted to opening a furrow, (generally with a subsoiler running behind to make a seed-bed), in combination with a covering wheel, a seed-box and mechanism actuated by the covering wheel for dropping the corn. Sometimes a lister is mounted on two wheels like an old-fashioned

sulky plow, and still other forms and adaptations have been used." (1,p.34)

Wallace's Farmer, v.53, no. 18, May 4, 1928, p.31 is authority for the following quotation:- "The lister was first introduced in Kansas in 1882, and proved popular from the first. By 1902 three-fifths of Kansas corn land was listed. The early listers were all single row implements, and had an incomplete turn of the moldboard which scraped up a ridge rather than turning a well rounded furrow."

Recent developments

"C. H. and H. L. Dooley, of Bloomington, Illinois, devised a clutch, patented November 28, 1893, by means of which an exact number of cells could be passed under the cut-off between each hill and the next, and the planter became a counting as well as a planting machine. This patent was re-issued July 23, 1895. (5, p.5)

In the 1900 Census (11, p.360) appears the following statement: "A late style of corn-planter, embodying nearly all the approved devices, is a two-horse machine, constructed almost entirely of steel, with two seed-boxes, and check rower, drill, and force-feed attachments for which are claimed absolute accuracy in dropping the seed, regularity in the number of seeds dropped, and adaptability to different inclinations of the soil, secured by a lever which forces the runners to work at equal depth under different conditions. This machine can also be adjusted to rows varying in width."

From 1900 to the present time (1935) no radical changes have been made in the general design of conventional 2-row horse-drawn corn planters. However, the planter has been greatly improved, strengthened and refined, and has reached a high degree of perfection and versatility. On modern corn planters the distance in drilling as well as the number of kernels per hill in hilling can be readily changed, the marker is automatically shifted in turning, and different kinds of runners and disk furrow openers as well as other attachments, can be readily mounted on the machine.

Attachments for distributing fertilizers simultaneously with the planting of the corn closely followed the development of successful planters. Until recent years these attachments were very simple, and the fertilizer was directed through a tube at the rear of the seed shoe into the seed furrow. The increased use of mineral fertilizers instead of organic materials during the past fifteen years, necessitated the separation of the fertilizer from the seed to avoid injury. Devices were developed for placing the fertilizer only at the hills of corn, and to give some separation of seed and fertilizer. A reasonably successful type of fertilizer depositor, consisting of a boot with valve and divider covered by a hood, was placed on the market in 1929. With this device the fertilizer is deposited at each side of the row, either in continuous bands or in short bands at the hills.

With the introduction on the market in 1924 of the general purpose or row crop tractor, four-row corn planters were used. The first planters of this type consisted of two horse-drawn machines held together by a suitable hitch, and were pulled by the tractor. Numerous developments followed rapidly

and at the present time two-and four-row corn planting units for tractors are on the market. Both power-lift planters for mounting on the tractor, and units to be pulled by the tractor, are available. The necessary soil working tools are available for use with tractor planters to permit planting on ridges, on level land, or in list furrows. Some of the most recent tractor planting attachments have individual floating units for accurately drilling corn on uneven or terraced land, and are equipped to place the fertilizer in a band at the side of the row.

Corn planters are now built in a number of different types and sizes of machines, to meet the varied requirements and conditions. Interchangeable seed plates are available for planting seed of numerous kinds of crops. Some planters are equipped with hoppers or attachments to permit planting peas or other seed at the time of planting corn. Furrow openers are also available for planting seed at a variable depth to provide greater assurance of a stand of plants under adverse conditions, particularly for crops which are thinned after the plants come up.

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FARM MACHINES, OLD AND NEW, IN PICTURES:

FOR CORN PLANTING

FOR CORN PLANTING

Figure 1.- Planting or dropping corn by hand.

Figure 2.- A hand corn planter, an improvement over hand dropping.

Figure 3.- A horse-drawn corn planter of a type used in the United States about the middle of the 19th century.

Figure 4.- An early check-row corn planter of between 1850 and 1860. The field was first marked off, and, in planting, the dropping mechanism was tripped by hand at intersections with the transverse marks.

Figure 5.- A two-row, check-row corn planter in which a wire with regularly spaced obstructions is used for tripping the planting mechanism. A patent was granted on this type of planter in 1857.

Figure 6.- A modern four-row corn planter mounted on a tractor.

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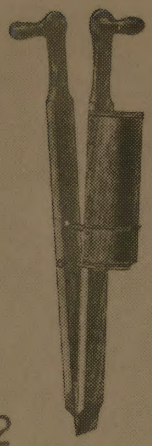

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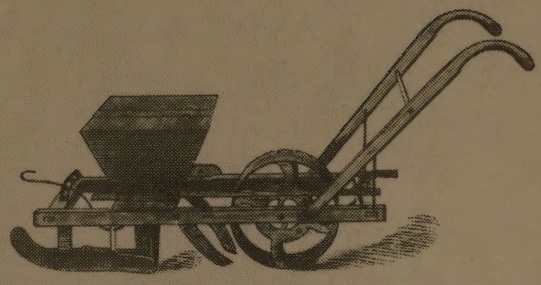

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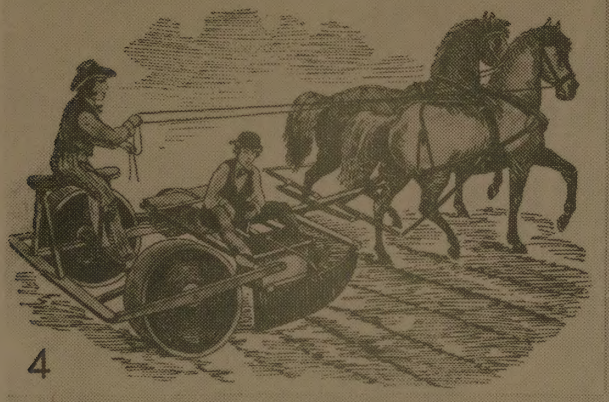

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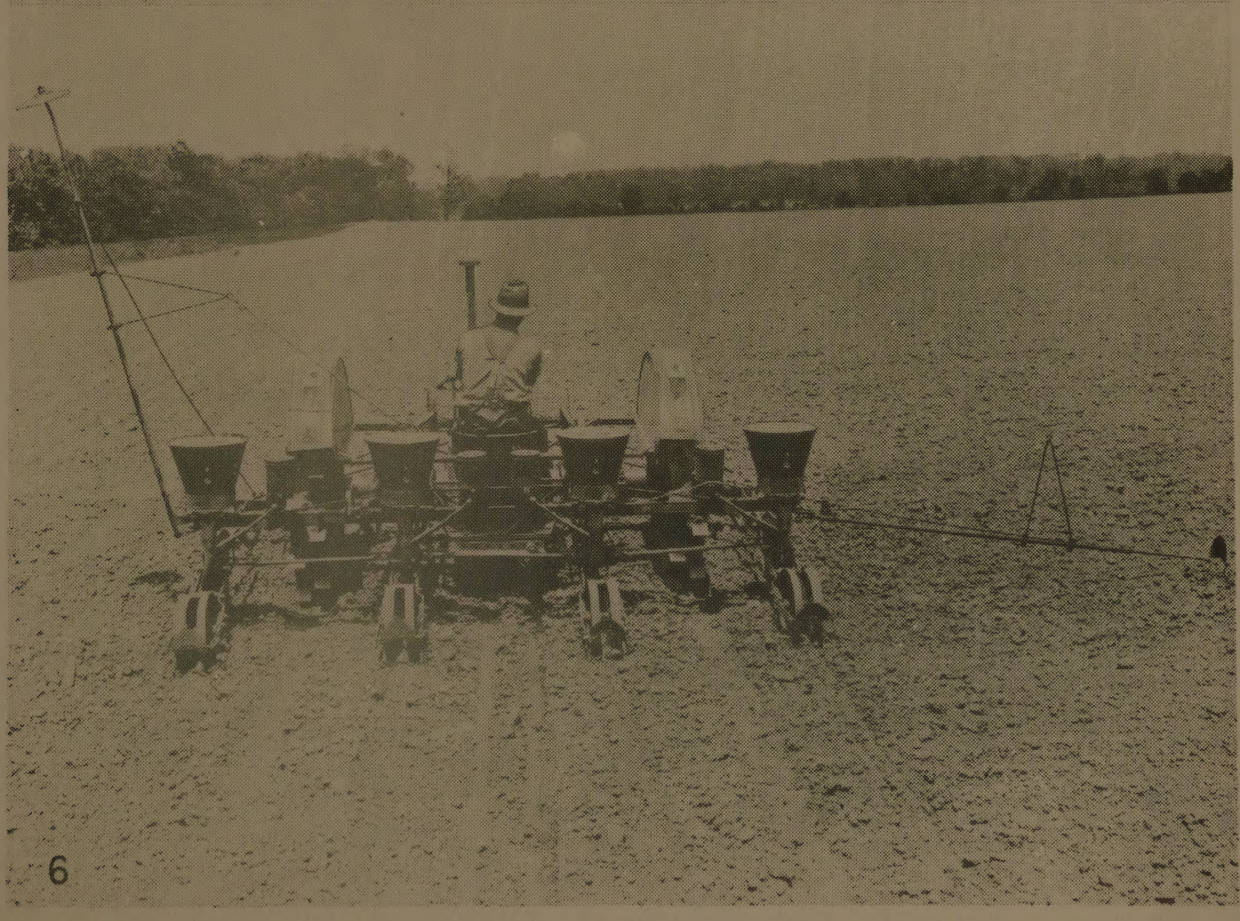

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